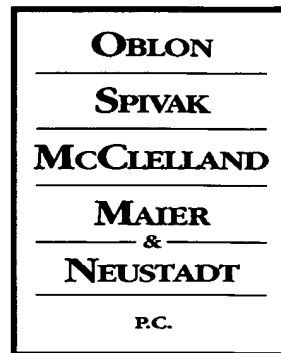




Docket No.: 241538US3X

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313



ATTORNEYS AT LAW

NORMAN F. OBLON  
(703) 413-3000  
NOBLON@OBLON.COM

ROBERT T. POUS  
(703) 413-3000  
RPOUS@OBLON.COM

RE: Application Serial No.: 10/645,543

Applicants: Fumio KINOSHITA, et al.

Filing Date: August 22, 2003

For: CONTINUOUS UNDERGROUND TRENCH  
EXCAVATING METHOD AND EXCAVATOR  
THEREFOR

Group Art Unit: 3671

Examiner: BATSON, V.

SIR:

Attached hereto for filing are the following papers:

### SUPPLEMENTAL RESPONSE

Our check in the amount of \$0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

OBLON SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Norman F. Oblon  
Registration No. 24,618

Robert T. Pous  
Registration No. 29,099

Customer Number

**22850**

(703) 413-3000 (phone)  
(703) 413-2220 (fax)  
I:\cfdav\241538.cvr



DOCKET NO: 241538US3X

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
FUMIO KINOSHITA, ET AL. : EXAMINER: BATSON, V.  
SERIAL NO: 10/645,543 :  
FILED: AUGUST 22, 2003 : GROUP ART UNIT: 3671  
FOR: CONTINUOUS UNDERGROUND :  
TRENCH EXCAVATING METHOD AND  
EXCAVATOR THEREFOR

SUPPLEMENTAL RESPONSE

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Office Action dated February 22, 2005 and the notice of non-responsiveness dated Jul 11, 2005, Applicants respond as follows:

The Examiner had objected to the specification because equations 2 and 3 allegedly reduce to  $F_z=0$ . Applicants replied in the response of April 22, 2005 that equation 2 is directed to the penetration resistance during penetration operation whereas the value of the frictional resistance  $F_{fz}$  in equation 3 is calculated by operating the lift cylinders in an unloaded (unlanded) floating state (page 9, lines 7-10).

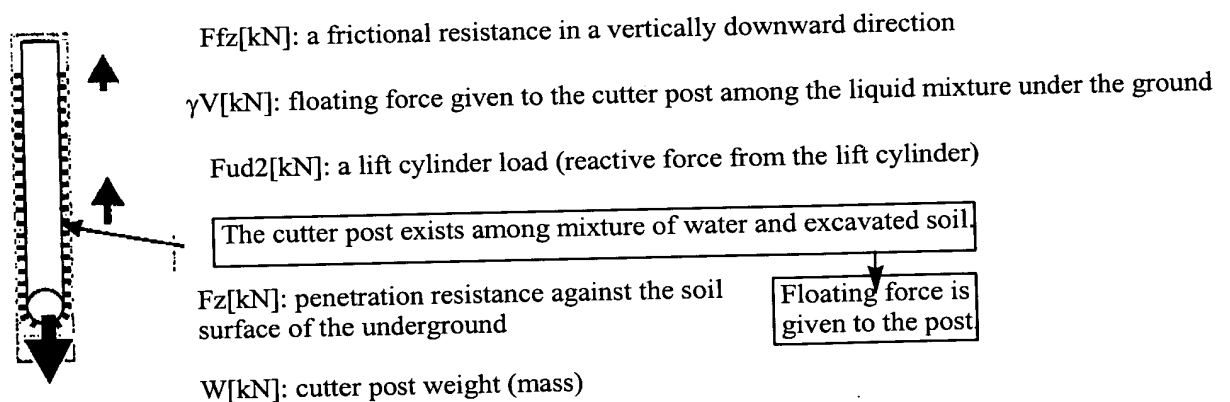
According to the notice of non-responsiveness, if equation 3 represents resistance when the trencher is floating in the air, why does the cutter post volume or the liquid specific gravity  $\gamma$  around the cutter post affect frictional resistance. In reply, Applicants note that while equation 3 refers to the excavator being in an "unlanded, floating state in the air," this does not require that it be out of the environment of the trench.

Even when bottom end of a cutter post is away from the bottom of underground, the bottom end of the cutter post exists among mixture of water and excavated soil and so floating force is always given to the cutter post. The mixture has a specific gravity of 1.4 - 2.0 generally. The liquid mixture is set for the purpose of preventing the excavated soil from falling apart.

The former question that a value of  $F_z$  comes to "zero" ( $F_z = 0$ ) when Equation (3) is incorporated into Equation (2):

The values of  $F_{ud}$  are different from each other in equations 2 and 3 since there is difference between the situation considered under Equation (2) and the situation under Equation (3). Generally,  $F_{ud3}$  (as described below) is larger than  $F_{ud2}$  ( $F_{ud3} > F_{ud2}$ ) since  $F_{ud3}$  has to support a force given to the bottom end of the cutter post.

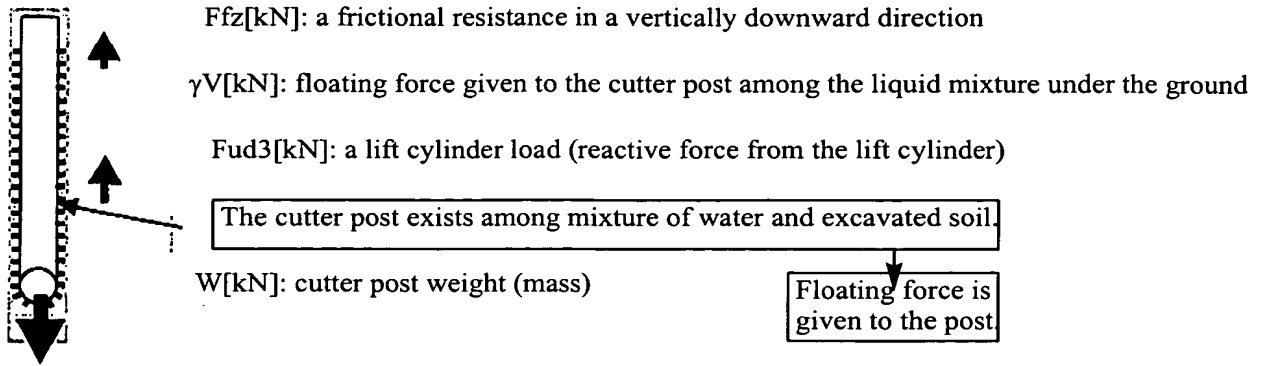
In a case that the bottom end of the cutter post is penetrated into the ground and penetration resistance  $F_z > 0$  (namely, in a situation of Equation (2))



In a case that the bottom end of the cutter post is penetrated into the ground and the bottom end of a cutter post is away from the bottom of underground (the soil surface of the underground) and that the penetration resistance  $F_z = 0$  (namely, in a situation of Equation (3))

$$F_{fz} = W - F_{ud3} - \gamma V \quad (3)$$

(When the post is stopped,  $F_{fz}$  comes to "zero" ( $F_{fz} = 0$ ))



Applicants believe that the present application is in a condition for allowance and respectfully solicit an early notice of allowability.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon

Robert T. Pous  
Attorney of Record  
Registration No. 29,099

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 06/04)  
RTP/rac